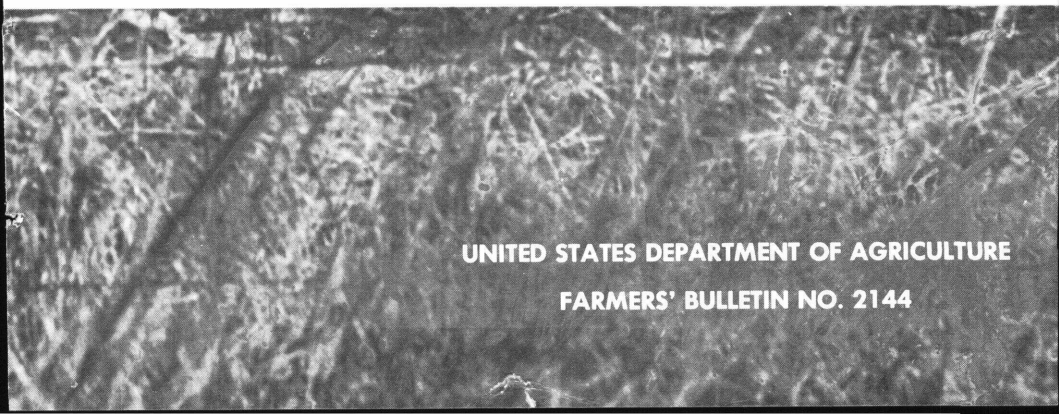
Managing Farm Fields, Wetlands, and Waters for Wild Ducks in the South



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You can make good use of some of your farm land and waters and aid in the Nation's conservation of wild ducks by growing good duck foods as part of your soil and water conservation plan. Wild ducks offer pleasant recreation for land owners and operators and their guests. And the sale of shooting rights can add to farm income, bring more money into the community, and provide dependable hunting.

Most farmers in the South can attract wild ducks to their farms—to hunt or simply to see. To have ducks on your farm, you must have food for them. Your success, provided you have suitable soil and water conditions, will depend on having the right plants.

This bulletin describes the kind of food-producing duck fields, marshes, and ponds you can establish on your own land and explains management practices for them. These practices apply to the South where the conservation of wild ducks requires winter food and resting areas rather than summer food and nesting cover.

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CONTENTS

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Managing Farm Fields, Wetlands, and Waters for Wild Ducks in the South

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IF YOU HAVE WETLAND or some land that you can flood, you can attract wild ducks to your farm. Wild ducks will also come to almost any lake, reservoir, or farm pond. But usually they won't stay unless they find an ample supply of good food.

Ducks sometimes feed in dry fields of corn, sorghum, buckwheat, soybeans, barley, and rice. They are more likely to feed in these fields when geese are feeding there too. But, you can't count on ducks coming to dry upland fields.

Ducks are heavy eaters. A mallard will eat from 1 to 2 pounds of grain each week. One acre of land can be made to feed from 50 to 100 ducks very well during their stay in the South from October to March. If you want ducks, plan to feed them through the whole winter season.

There are several choice duck foods which you can grow dependably in farm fields and woodlands that can be flooded or in ponds and marshes. And you can grow these duck foods as a regular part of your soil and water conservation plan.

To grow suitable foods and make them available to ducks, you will also be concerned with water management. The kind of land you have and your water supply—whether fresh or brackish—may limit your choice of plants. This publication can help you decide on the duck-food plants best adapted to your particular site. You can get help with your site and design problems from your local soil conservation district.

Farm Fields for Ducks

A farm field for ducks is an area cultivated, planted, and managed to produce duck foods and then flooded with water

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A successful farm field for ducks can be planted on diked bottom land.

at the right time to make the food available to ducks. You can establish a successful field for ducks on flat areas below or around a farm pond, on diked bottom land and marshland, or on cropland such as rice or corn fields. You must be able to flood the field to a depth of from 1 to 15 inches. You can manage such a field for ducks more dependably than you can woodland, duckponds, marshes, or fresh-water ponds.

Your water supply may be stored nearby in a pond or in an irrigation reservoir. Or it may be a well, stream, bayou, or tidal river. The amount of water available may determine the size of the duck field you can establish.

Flooding may be done in several ways. Gravity-flow flooding is easy and economical. Low-head turbine pumps are also practical. Don't depend on runoff from fall rains for flooding. Dry Octobers and Novembers come too frequently.

Your field will need a dike around it. And you should provide a water-level control that in winter will maintain automatically any level you choose. For summer cultivation, you will need some way to drain off the water to plow depth or lower.

Selecting and Planting Duck Foods

Some of the best plants for duck fields are corn, browntopmillet, smartweed, barnyardgrass, Japanese millet, and buckwheat. Table 1 lists the advantages and disadvantages of these and other plants commonly thought suitable for planting as duck food.

Corn is a choice food of most wild ducks. You grow corn for ducks the same way you grow it for other uses. Plan for a yield of at least 60 bushels per acre. Plant the best varieties of seed and cultivate and fertilize as recommended for best corn production in your locality. Corn needs deeper drainage than any of the other duck foods discussed here.

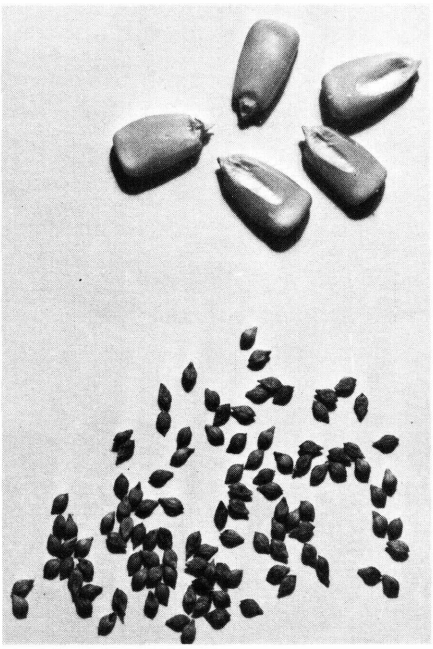
After the crop is made, leave it standing and flood it. It is illegal to attract ducks for hunting by either dragging or mowing corn down or by picking, shucking, or shelling it. Any one of these would be considered baiting. You may need to harvest a small area to make an open pond if there is no other open water in or alongside the standing corn. During the winter the corn falls over progressively into the water. Ducks will eat every grain from every ear—whether the

TABLE 1.—*Evaluation of some duck-food plants*

Kind of plant	Advantages	Disadvantages
Acorns	Choice food of mallard, black duck, and wood duck. Deterioration low (less than 10 percent in 90 days).	Yield variable. Growth too slow for tree species to be planted for ducks.
Arrowhead (duckpotato)	Adapted to mud flats and shallow water within its geographic range.	Seldom used by ducks.
Arrowhead, delta	Choice food of canvasback, gadwall, mallard, pintail, and ring-necked ducks. Adapted to mud flats and shallow water within its geographic range.	Habitat limited to lower Mississippi gulf coast area.
Barnyardgrass	Fair duck food. Good stands under natural conditions.	Large percentage of the seed is chaffy.
Browntopmillet	Choice duck food. Adapted to all but the wettest soils. Keeps well underwater. Can be planted in midsummer.	Slight competitive use by other birds. Must plant annually. Must fertilize for high yields.
Buckwheat	Choice duck food. Easy to grow. Can be planted in midsummer.	Seeds deteriorate rapidly underwater. Must plant annually. Low yields in deep South.

TABLE 1.—*Evaluation of some duck-food plants (Cont'd.)*

Kind of plant	Advantages	Disadvantages
Bulrush (Olney, salt marsh).	Fair duck food in brackish and salt marsh. Yield heavy.	Nutrition level not known.
Chufa	Choice food of mottled ducks, mallards, and pintails.	Raccoons may destroy planting.
Cockspur	Fair duck food. *E. Walteri* tolerates medium salinity.	Chaffy.
Corn	Choice food of most wild ducks	Requires cultivation, adequate fertilization, suitable drainage. Kernels deteriorate when flooded more than 30 days.
Cowpeas	Good seed yields. Easy to plant	Value as duck food unproved. Deteriorates rapidly.
Duckweed	Spontaneous growth under proper conditions.	Fair duck food. Does not attract ducks even when abundant.
Japanese millet	Choice duck food. Grows on soils too wet for browntopmillet. Can be planted in midsummer.	Rapid deterioration of the seeds when flooded. Competitive use by nongame birds.
Naiad	Wide geographic adaptation	Fair duck food. Requires waters with methyl-orange alkalinity greater than 30 p.p.m. Management against useless weeds not known.
Potamogeton (sago)	Choice duck food	Ponds favorable for potamogetons are often invaded by useless vegetation. Sago requires methyl-orange alkalinity greater than 50 p.p.m.
Redroot	High yield of good food for mallard, black duck, and pintail.	Difficult and uncertain to manage. Limited to organic soils.
Rice	Choice duck food. Good keeping qualities underwater. Waste grain from commercial crop can be flooded in winter.	Blackbirds and bobolinks eat most of the seed if left standing. Expensive to grow as duck food.
Smartweed	Choice duck food. Perennial or reseeding annuals. High seed yield. Well adapted to duck-field soils. Excellent keeping qualities when flooded. Duck fields may be grazed in summer.	Seed scarce commercially. Seeding techniques not well developed.
Grain sorghums (Hegari, Combine milo, etc.).	Choice duck food. High yields per acre.	Blackbirds, crows, and sparrows eat most of the seed before the ducks arrive. Deteriorates rapidly (mildew).
Soybeans	Choice food of mallards. Good yield of seed.	Rapid deterioration.
Watershield	Food for ring-necked ducks. Can be grown in acid and organic-stained waters.	Impoundments suitable for watershield are often dominated by such plants as waterlilies and bladderwort.
Widgeongrass	Choice duck food. Simple and easy to grow. With proper water salinity, little or no competitive vegetation.	Can be grown only in brackish or alkaline waters.
Wildrice	Choice duck food	Not adapted to fields and ponds; grows in slightly brackish water; ricebirds and sparrows eat most of the crop in the South.



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Corn and browntopmillet seeds are choice food of most wild ducks.

corn is underwater, on the surface of the water, or hanging 8 to 10 inches above the water. They will feed also on the ground close around the pond—only a few yards away during the hunting season but 100 yards or so later.

Browntopmillet will grow on soil that is dry enough to cultivate and plant in July. The browntop must be protected against standing water during its growing season. This is a choice food of mallards, black ducks, pintails, wood ducks, and probably most other ducks. Its seed crop matures about 60 days after planting. When fertilized as needed, browntopmillet will yield 1,500 pounds of seed an acre. You can buy seed from seed houses at low cost.

You will have to plant browntopmillet every year. Prepare the land by disking or plowing in early July. This midsummer preparation sets back competing weeds and grasses and the browntopmillet still makes a full yield of seed. Earlier planting—April to June—produces excess leaves and stems and permits summer-ripened seed to deteriorate. August planting is too late in the northern part of the Southeast but is all right for Florida and the southern half of Louisiana, Mississippi, Alabama, and Georgia.

Plant 20 pounds of browntopmillet seed per acre. Drill the seed ½ to 1 inch deep or broadcast it and cover with a drag if you do not have a drill. Apply at least 500 pounds of 5–10–5 fertilizer, or its equivalent, per acre.

Smartweed seed is choice food for many kinds of ducks. You can manage smartweed in duck fields. There are several high-yielding kinds: Pennsylvania smartweed, swamp smartweed, and dotted smartweed. Smartweeds are adapted to sites slightly wetter than those for browntopmillet and buckwheat, or even Japanese millet.

The chief disadvantages of smartweeds are (1) very little seed is available commercially and (2) seeding techniques are

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(Top) Wide-spaced corn and browntopmillet are planted in this field for duck food. (Bottom) The field must be flooded to make the food available to ducks.

Smartweed is choice duck food.

not well developed. Smartweed seeds are naturally present in most wetlands selected for duck fields. Thus you may need only to disturb the soil enough to germinate seed and control competing weeds to get good stands.

You can establish smartweeds also by transplanting seedlings and rootstock from a wild stand. Do this in the spring. Space plants 2 to 3 feet apart. Keep the ground moist; in fact, it is best to plant in saturated soil. A few dozen plants will be enough to produce a stand in a few years.

You can favor smartweeds by burning the field in early spring, as soon as you can drain off the water. Burning followed by light disking is even more effective. Or you can disk alone where burning may be a hazard. Another way to improve a stand of smartweed is to graze it moderately in spring and summer. Smartweeds have a peppery taste and acrid odor livestock do not like. Heavy grazing is harmful because livestock nip the tops of young smartweeds and trample seedlings severely.

The stems of smartweeds and many other duck-food plants accumulate heavily on the ground in a year or two. This condition is poor for duck feeding. Burn or disk this debris each spring after it is dry enough. Burning is better and cheaper than plowing unless it is a hazard to peat soils in the dike or to woodland and pasture next to the duck field. Then you must plow or disk the vegetation into the soil.

Barnyardgrass and a variety of it called Japanese millet grow well on wet soils. Of the two, Japanese millet is the better duck food; it is heavier and less chaffy. Both varieties will grow on wetter

Barnyardgrass is only a fair duck food.

Japanese millet is a choice duck food and grows on soils too wet for browntopmillet.

soils than browntopmillet. They both deteriorate more rapidly underwater than smartweed, browntopmillet, and corn. Both varieties volunteer and grow as weeds in ricefields. You can buy the seed in commercial channels. Plant these grasses in July. They mature in about 60 days. Seed and fertilize them as you would browntopmillet.

Buckwheat is a choice duck food, but it deteriorates rapidly underwater. In the deep South, it does not produce well. In Tennessee and northward, however, results may be better. Planting time, adapted soils, fertilization, and flooding are similar to those for browntopmillet. Seed at the rate of 3 to 4 pecks an acre. Cover the seeds from 1 to 1½ inches deep.

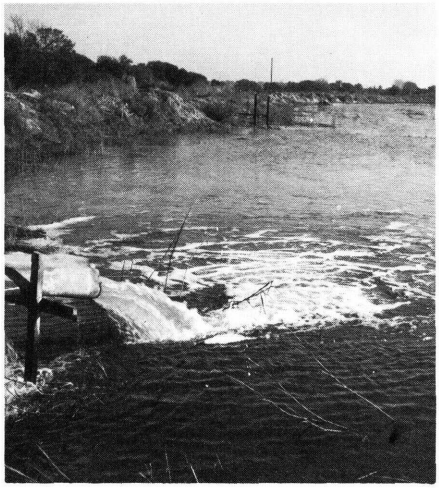
Managing Water

Farm fields managed for ducks are flooded after the seed crop matures—usually late October. A feeding depth of from 1 to 15 inches is correct for ducks that "tip" to feed—mallards, black duck, pintail, widgeon, gadwall, wood duck, teal, and shoveler. *These ducks cannot reach food easily if you flood the field deeper than 15 inches.* Diving ducks such as ring-necked, scaup, redhead, and canvasback can feed readily in several feet of water. In fields where the high point is more than 15 inches above the low point, raising the water level a few inches at a time makes it possible to have fresh food available as winter advances. Careful management leaves some food for spring, too.

Keep the water on the field until the ducks fly North again—March or early April. Send them back strong.

Converting Marshland to Fields for Ducks

Marshlands with heavy growths of plants such as giantcutgrass, cattails, maidencane, and reed can sometimes be converted to duck fields. These plants are often hard to destroy. This is particularly true where the ground cannot be drained enough to support heavy tractors for disking or plowing. Usually, however, you can destroy heavy growths of giantcutgrass this way: (1) Drain the field as completely as possible; (2) mow it in late July or early August; (3) burn the field when the hay is dry (after 2 or 3 weeks); (4) flood the field immediately, as deep as your gates will permit; and (5) keep it flooded until the following



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A duck field must have a reliable source of water for autumn flooding.

spring. By then the cutgrass will be virtually eliminated, and you can drain the field and grow one of the better duck foods. Do not destroy all the cutgrass in a large field. Leave some strips or plots scattered over the field for natural blinds.

If you have dikes high enough to flood these heavy marsh plants to a depth of 3 feet or more, you can kill them by 2 years of continuous flooding. In most marshland, however, high dikes are too expensive.

Herbicides that kill heavy marsh plants also kill many duck-food plants. Discussion here is therefore omitted.

Flooding Rice Fields After Harvest

Waste rice and grass seeds (paspalums, panicums, barnyardgrass, junglerice) can be made available to ducks if you flood your rice field during the winter. This is an important opportunity in rice-growing areas. Such fields are most attractive to ducks when an acre or two of the rice stubble is disked down to make an open pond area.

Woodlands for Duckponds

To choose a good site for a woodland duckpond, look for a flat wooded area of several acres you can flood with shallow water (1 to 15 inches). For example, low-lying swamps and bottom-land hardwoods can be flooded for ducks, thus giving you dual use of these areas. In addition to the wood products, you get good duck hunting. You flood the woodland only during the winter. If you flood it the year round, you kill the trees and permit growth of useless waterweeds that clog the shallow water. Pines should be removed because flooding will kill them.

Woodland duckponds attract mallards, black ducks, and wood ducks. Acorns and beechnuts are choice duck foods. Smartweeds and panicums furnish additional food where the tree canopy is open.

You can also make clearings and plant them to browntopmillet or smartweed. The food in these openings will attract ducks.

You get more acorns from oak trees if you remove nearby trees of useless species. Remove brush and bushes from your woodland duckpond when your farm labor is not pressed with other work.

The water-control gate of your woodland duckpond should be designed to take care of the normal summer flow. Emergency spillways at either or both ends of the dike are needed for periods of peak flow. Close the gate the last of

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Open-water areas attract ducks to marshes.

October and allow the area to fill and remain flooded until March. Winter flooding favors the growth of commercial hardwood trees.

Marshes for Ducks

Contrary to popular opinion, most natural marshes furnish little food for ducks. You can, however, manage natural marshland to produce more duck food than they naturally do. Even though you seldom produce as much food per acre on managed marshes as on cultivated fields, the vastness of marshes in Louisiana and other coastal areas make them very important areas for duck-food management.

Open-water areas attract ducks to marshes. You can provide these open areas by grazing, burning, or mowing, or by mashing down the marsh vegetation with a marsh buggy.

The following practices, used alone or in combination, improve natural marshland for wild ducks:

Grazing

To favor ducks, graze the marsh enough to "open up" the grass cover and make room for choice duck foods, such as smartweed. Barnyardgrass will come in if cattle are removed by July.

In fresh-water marshes, giantcutgrass, common reed, and maidencane (called "paille fine" in Louisiana) usually dominate. They are not good duck foods. They are, however, nutritious marsh plants for cattle, and cattle prefer them to the duck-food plants.

In brackish and salt marshes that lie above the normal daily tides, seashore paspalum, cordgrasses, saltgrasses, and reed dominate. Grazing reduces these poor duck-food grasses and favors Olney bulrush and saltmarsh bulrush, which are fair duck foods. Cockspur, also a fair duck food, will come in if cattle are removed by July.

Burning

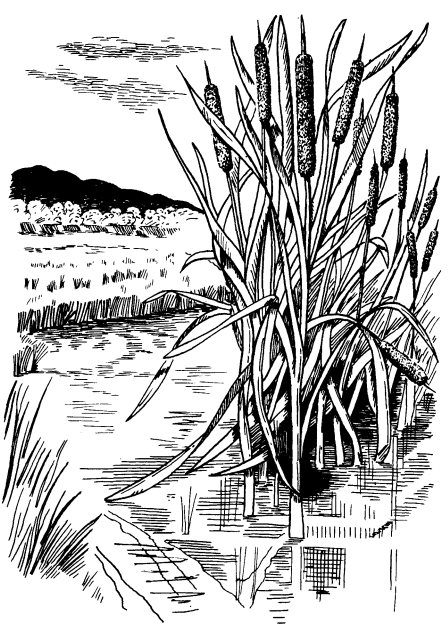
Fire is useful in managing marshes for ducks (also for geese and muskrats). Like grazing, fire can be used to reduce coarse, perennial marsh plants and to create favorable conditions for growing natural duck foods. Dead stems and blades of previous years' growth gradually fill a marsh with debris. This debris eliminates open water and makes feeding difficult or impossible. Remove it every year or two by burning the marsh in winter or spring.

Controlling Water Levels

A low levee can be built to hold water on some natural marshes. Such levees should hold from 2 to 12 inches of water over the marsh. Gates in the levee—and pumps where necessary—hold, lower, and raise the water when desired. Smartweeds and cockspur can be managed by controlling the water levels properly.

Getting Rid of Cattails

Cattails grow in fresh-water marshes but are useless to ducks. Their control is difficult. Chemical sprays such as 2,4-D, 2,4,5-T, dalapon, and TCA are expensive and are unproved for duck waters. If your marsh can be drained



Cattails grow in fresh-water marshes but are useless to ducks.

and plowed, cultivation will get rid of cattails. If you have brackish water nearby, you may flood your cattail marsh and grow widgeongrass.

Fresh-Water Impoundments for Ducks

Some fresh-water impoundments that hold water all year are used by ducks. The principal foods you can grow here are submerged aquatic plants.

Reservoirs

Ducks frequently rest on industrial or municipal reservoirs both day and night. But these waters seldom produce duck foods of any consequence.

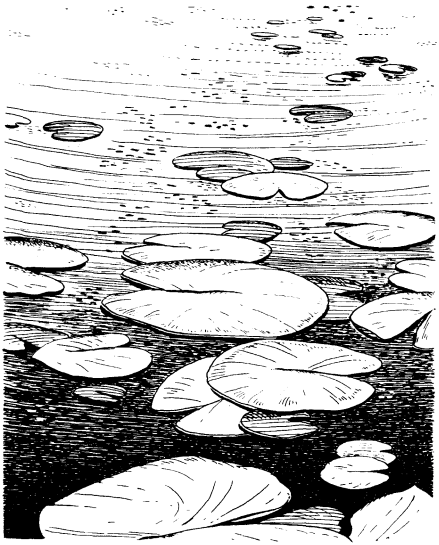
In Arkansas, Louisiana, and Mississippi—particularly in the rice-growing areas—landowners build reservoirs by leveeing around sizable acreages. They pump the reservoirs full in winter and spring and use the water for irrigating rice, cotton, and other crops in summer.

Many of these irrigation reservoirs are impounded on hardwood bottom lands where the trees are left standing. They attract ducks well the first and second winters. The trees stop producing acorns after the first year and die in about 3 years from having water around them through spring and early summer. The dead trees become useless because they no longer provide good food or cover. As this occurs the ducks use the reservoirs less.

Fishponds

The best farmponds built for fish have deep edges and are managed to prevent growth of waterweeds and seeding plants. Thus, you will find it difficult or impossible to grow enough duck food in a good fishpond. It is more practical to establish a duck field on flat land below your fishpond. Then use part of the pond water to flood the field in the fall.

Another practice is to lower the water level of a large pond or lake that has shallow water at its edges. Draw the water down 2 or 3 feet in July. Without any soil preparation, broadcast Japanese millet on the edges. Raise the water level again in October. This may reduce fish production but it gives a resting place and food for the ducks. You can control willows and other woody plants with 2,4-D or 2,4,5-T spray.



Waterlilies are worthless to ducks and can choke out desirable duck-food plants.

Duckponds

Fresh-water duckponds are difficult to manage. This is true because the same conditions that grow choice aquatic duck foods are ideal for many kinds of worthless plants. If you have acid, organic-stained, muddy, or low-calcium waters, you may not be able to grow any aquatic duck foods. If your pond already has watershield, naiad, or potamogeton as its principal duck food, leave it as it is.

Watershield is adapted to the waters of many duckponds, even those with some organic stain. It is a fair food for diving ducks such as ring-necked. Naiad and southern naiad are good duck foods adapted to a rather wide range of conditions. A few species of potamogeton are good foods. One of them called "sago" is choice. However, before you attempt any expensive planting or management of sago potamogeton, have the water tested for alkalinity by the methyl-orange

method. If your water has less than 50 parts alkalinity per million parts of water, it will not grow sago.

Waterlilies, spatterdock, cowlily, parrotfeather, bladderwort, cattails, and many other worthless species may invade your fresh-water duckpond. Eventually, they will choke out most of your good duck foods. Control methods include: (1) Spraying with ester 2,4-D in diesel oil for temporary control of the emergent types; (2) treating the entire pond with 2,4-D granules or silvex to kill waterlilies and submerged vegetation including the duck foods—then the choice duck foods can be reintroduced; and (3)—the most practical approach—draining the pond and using it for crops or pasture for a few years.

Brackish-Water Ponds for Ducks

Sites for brackish-water duckponds are common in coastal salt marshes. These marshes naturally have a heavy growth of needlegrass rush or cordgrass, both of which are almost worthless for ducks. Such areas are not suitable for cropland, tame pasture, or woodland. But you can make them into excellent duckponds at reasonable cost. Management is easy—control the salt content of the water to favor widgeongrass.

Site Selection

Select an area you can enclose with a dike. You will want a water depth of at least 2 feet. Your soil conservation technician will help you select a good site and design the dike.

In choosing a location for the dike, avoid crossing tidal creeks, runs, or sloughs so far as possible. These usually have soft bottoms that make them difficult to fill. Your dike should be at least 3 feet above the impounded water level. A dragline is commonly used for making the fill. Sometimes, however, it is feasible to haul in soil from adjacent high ground.

Control Structures

Prefabricated control structures are available from several manufacturers, and

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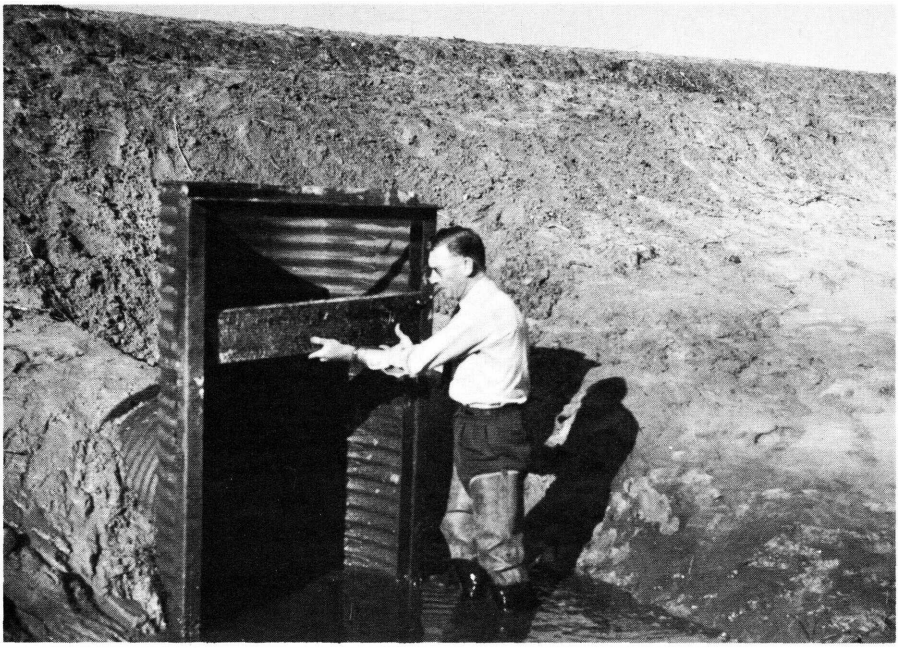
Coastal salt marshes can be diked for successful brackish-water duckponds.



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A prefabricated water-control structure like this is an easy way to control water levels in a duck field. An asphalt-coated corrugated metal pipe that runs through the dike is attached to a riser on the pond side.

you will probably find them more economical than building your own. One type has an asphalt-coated corrugated metal pipe that goes through the dike and is attached to a riser with flashboards to control the water depth. The flashboards also give you easy salinity control. Set the flashboards in the riser at normal high-tide level. Remove the top board to increase saltiness.

A brackish-water pond also needs a wide spillway to protect it against storm tides so the water level inside the pond can rise or fall with the level outside. This way, if the storm tide rises higher than the dike, no breakage or backwashing will occur. When the tide recedes, the water will lower to the level set by the top flashboard.

Water Management

You need not remove the marsh vegetation inside the pond basin before impounding water. Although needlegrass rush and cordgrass thrive with the daily ebb and flow of the tide, a constant depth of 2 feet or more kills them quickly, and they disintegrate.

Filling the pond and maintaining the water level are simple operations. Flashboards are placed in the riser at high tide to hold the water at the normal high-tide level. Thus the monthly highest tide will spill over into the pond. This keeps the pond at maximum level and recharges it occasionally with salt water.

When the pond becomes too fresh—as shown by growth of fresh-water vegetation, by poor growth of widgeongrass, or by measurement with a testing device—take off one of the flashboards. This allows salt water to flow into the pond every day during normal high tides. You can safely let this extra salt water flow in for 3 to 4 weeks.

Where there is not enough tidal fluctuation to fill your pond, use a pump to recharge the salinity. The low-head turbine pumps used for flood irrigation and

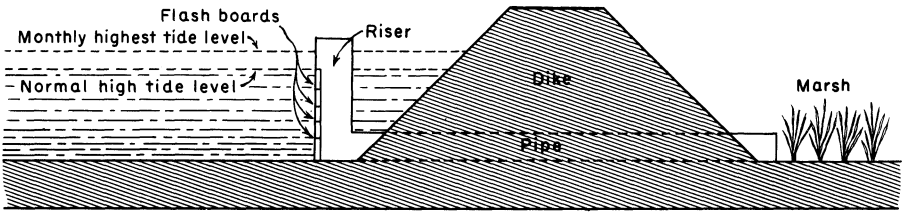

Diagram of a brackish water-control structure.

drainage are well suited for this. After the pond is filled, pump in water only when necessary to replace evaporation losses or to recharge the salinity.

What To Grow

Widgeongrass is the best duck food to grow in brackish ponds. It is a choice food of many ducks—widgeon, gadwall, black duck, redhead, and ruddy duck, lesser and greater scaup, shoveler, old-squaw, and blue-winged and green-winged teal. Canvasback, mallard, mottled duck, and blue-winged teal eat widgeongrass less. Ducks eat the seeds, leaves, stems, and even the roots of this plant.

Widgeongrass is the best duck food to grow in brackish ponds.

Sago potamogeton grows in brackish water but it grows best at less salinity than does widgeongrass. Sago is a choice duck food but is difficult and uncertain to manage. Some kinds of undesirable vegetation such as tropical cattail also thrive in water of the salinity required by sago. The greater amount of salt in a widgeongrass pond usually keeps pest plants out.

Widgeongrass grows best in waters with a salinity of about 10,000 parts of salt per million parts of water. This is 1 percent salinity—about one-third the salinity of ocean and gulf waters. Widgeongrass will survive in water much saltier or fresher than this so you won't need to keep the salinity in a narrow range. There are simple testing devices that you may be able to get from your soil conservation district.

Widgeongrass usually appears in a brackish-water pond without your planting it. A few bushels—raked out of a neighbor's pond or purchased from an aquatic nursery—scattered over the water will get it started. Any season of the year is suitable for planting, but spring is best because of the longer growing time. Growth and spread are rapid so by fall the pond should have extensive beds of widgeongrass growing from the bottom to the surface of the water. Do not be alarmed if a heavy concentration of ducks apparently eat up all the widgeongrass. There will be plenty of seeds and roots left to insure success the next year.

Widgeongrass needs protection against a smothering growth of filamentous algae (*Cladophora*). A native fish—common mullet—will eat the filamentous algae. To stock your pond with mullet, simply trap some of the natural population of fingerlings. Do this by closing the control gate or by placing the flashboards in the slots at high tide during the fingerling season—usually April to October, but as early as February in some years.

Hunting Suggestions

You manage water, plants, and land for ducks because you want to keep them on your ponds and water-covered fields to hunt or to see. But how can you enjoy some hunting and still encourage ducks to stay on your farm?

Remember, food is their chief attraction. A resting place is secondary, but also important. The time of day you hunt and possibly the frequency of your hunting are significant too if you want to keep the ducks on your farm.

Sundown-to-dark shooting almost always frightens the ducks away for the rest of the year. Bearing in mind legal shooting hours, shooting before 9 or 10 in the morning for an hour or two has proved more successful. This way the ducks can return safely to the feeding area and be unmolested the rest of the day.

You will have to learn by experience how often you can shoot without driving the ducks away from your food, water, and resting areas. On large woodland duckponds, where shooting in one area never frightens all the ducks away at one time, you can shoot more often than in small duck fields and ponds.

Sometimes half as many ducks are lost by crippling as are killed and recovered by hunters. You can reduce this waste. Don't shoot at ducks out of range. Learn the correct range for your gun. Your 12-gage gun with high-velocity loads will kill ducks well at 120 feet and less. A 16- or 20-gage shotgun usually cripples more ducks than it kills if the ducks are more than 100 feet away.

Everyone likes to see ducks feeding and resting. You and many of your guests may get your greatest pleasure from just watching or photographing the ducks.

SC–D18–19

Hunting wild ducks is pleasant recreation.

Common and Scientific Names of Plants Mentioned

arrowhead	*Sagittaria cuneata, S latifolia*
arrowhead, delta	*Sagittaria platyphylla*
barnyardgrass	*Echinochloa crusgalli*
bladderwort	*Utricularia*
browntopmillet	*Panicum ramosum*
bulrush, Olney	*Scirpus olneyi*
bulrush, saltmarsh	*Scirpus robustus*
cattails	*Typha* spp.
cattail, tropical	*Typha domingensis*
chufa	*Cyperus esculentus*
cockspur, coast	*Echinochloa walteri*
cowlily, spatterdock	*Nuphar advena*
duckpotato, see arrowhead	
duckweed	*Lemna* spp.
giantcutgrass	*Zizaniopsis miliacea*
Japanese millet	*Echinochloa crusgalli* var. *frumentacea*
junglerice	*Echinochloa colonum*
maidencane	*Panicum hemitomon*
naiad, northern	*Naias flexilis*
naiad, southern	*Naias guadalupensis*
panicum	*Panicum* spp.
parrotfeather	*Myriophyllum*
paspalum	*Paspalum* spp.
paspalum, seashore	*Paspalum vaginatum*
pondweed, see potamogeton	
potamogeton	*Potamogeton* spp.
potamogeton, sago	*Potamogeton pectinatus*
redroot, blood	*Lachnanthes tinctoria*
reed	*Phragmites*
rush, needlegrass	*Juncus roemerianus*
sago, see potamogeton, sago	
saltgrass	*Distichlis* spp.
sawgrass, Jamaica	*Cladium jamaicensis*
smartweed, dotted	*Polygonum punctatum*
smartweed, Pennsylvania	*Polygonum pensylvanicum*
smartweed, swamp	*Polygonum hydropiperoides*
waterlilies	*Nymphaea*
watershield, Schreber	*Brasenia schreberi*
wildrice	*Zizania*
widgeongrass	*Ruppia maritima*

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